

# California Air Resources Board

## User Guide

### California Energy Commission Low Carbon Fuel Production Program

### California Climate Investments



**Note:**

The California Air Resources Board (CARB) is accepting public comments the Draft Low Carbon Fuel Production Program (LCFPP) Benefits Calculator Tool and the Draft LCFPP Quantification Methodology until March 22, 2019 via [GGRFProgram@arb.ca.gov](mailto:GGRFProgram@arb.ca.gov). The Draft Benefits Calculator Tool and Draft Quantification Methodology are subject to change pending stakeholder comments and Final LCFPP Guidelines. The Final LCFPP Benefits Calculator Tool and Final LCFPP Quantification Methodology will be available on the California Climate Investments resources webpage at: <http://www.arb.ca.gov/cc-resources>.

**DRAFT**  
**March 5, 2019**

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## Section A. Introduction

For the California Energy Commission (CEC) Low Carbon Fuel Production Program (LCFPP), California Air Resources Board (CARB) staff developed the LCFPP Benefits Calculator Tool and accompanying LCFPP Quantification Methodology to provide guidance for estimating the greenhouse gas (GHG) emission reductions and selected co-benefits of each proposed project type. This User Guide provides instructions for using the LCFPP Benefits Calculator Tool (Section B) and example projects (Sections C and D).

The LCFPP Benefits Calculator Tool and supporting LCFPP Quantification Methodology are available for download at: [www.arb.ca.gov/cci-resources](http://www.arb.ca.gov/cci-resources). Methods and equations used in the LCFPP Benefits Calculator Tool for estimating GHG emission reductions and air pollutant emission co-benefits are provided in the LCFPP Quantification Methodology.

### Program Assistance

Applicants should use the following resources for additional questions and comments:

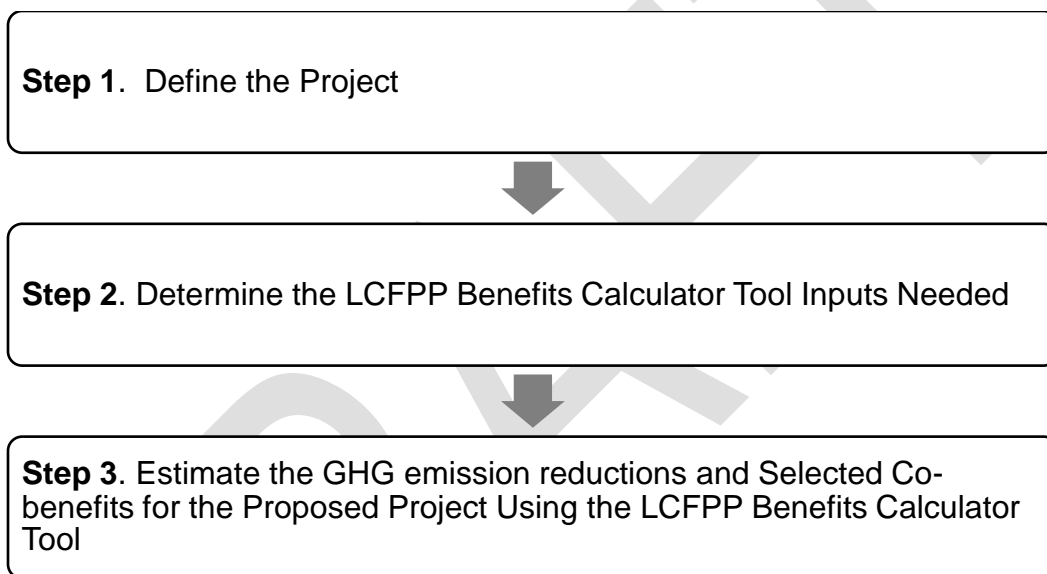
- Questions on this document should be sent to: [GGRFProgram@arb.ca.gov](mailto:GGRFProgram@arb.ca.gov).
- For more information on CARB's efforts to support implementation of California Climate Investments, see: [www.arb.ca.gov/auctionproceeds](http://www.arb.ca.gov/auctionproceeds).
- Questions pertaining to the LCFPP should be sent to [lowcarbonfuels@energy.ca.gov](mailto:lowcarbonfuels@energy.ca.gov).

## Section B. Step-by-Step Guide

### Overview

Applicants will follow the steps outlined in Figure 1 to estimate the GHG emission reductions and selected co-benefits from the proposed project. Detailed instructions for each step are provided on subsequent pages. Example projects showing how to estimate the GHG emission reductions and selected co-benefits from a project are included in Sections C and D.

**Figure 1. Steps to Estimating GHG Emission Reductions and Selected Co-benefits**



## Step 1: Define the Project

Applicants must define the project by identifying the eligible Project Type that applies to the project. The Project Type identified will determine which sections of the LCFPP Benefits Calculator Tool must be used in order to estimate the GHG emission reductions and selected co-benefits.

### Project Types

The CEC LCFPP reduces GHG emissions by supporting the production of renewable, ultra-low carbon transportation fuel that offset the use of conventional petroleum-based fuels. CEC developed two project types that meet the objectives of the LCFPP and for which there are methods to quantify GHG emission reductions].<sup>1</sup> Other project features may be eligible for funding under the LCFPP; however, each project requesting Greenhouse Gas Reduction Fund (GGRF) funding must include at least one of the following:

- New Facility; and
- Facility Expansion.

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<sup>1</sup> <https://www.energy.ca.gov/transportation/lowcarbonfuels/documents/>

## Step 2: Determine the LCFPP Benefits Calculator Tool Inputs Needed

Table 1 identifies the required data inputs needed to estimate the GHG emission reductions and selected co-benefits for the proposed project with the LCFPP Benefits Calculator Tool by project type.

**Table 1. Required LCFPP Benefits Calculator Tool Inputs for Eligible Project Types**

<b>ALL PROJECTS</b>
<p><b>General Information</b> (Project Info worksheet)</p> <ul style="list-style-type: none"> <li>• Project Name;</li> <li>• Contact Name;</li> <li>• Contact Phone Number;</li> <li>• Contact Email; and</li> <li>• Date Calculator Completed.</li> <li>• Total amount of LCFPP GGRF funds requested from this solicitation to implement the project;</li> <li>• Total amount of additional GGRF funds to implement the project (include GGRF funds previously awarded to the project by CEC's LCFPP or another California Climate Investments program, GGRF funds currently being requested from another California Climate Investments program, and GGRF funds the project plans to request in the future from CEC's LCFPP or another California Climate Investments program).</li> <li>• Total amount of funds from other sources, not from GGRF, required to implement the project.</li> </ul>

**Table 2. Required LCFPP Benefits Calculator Tool Inputs  
for New Facility Project Types**

NEW FACILITY
<p><b>Quantification Inputs (Inputs_Production Facility worksheet)</b></p> <ul style="list-style-type: none"> <li>• Project Type;</li> <li>• Date Operational;</li> <li>• Project Life (years);</li> <li>• Annual Facility Uptime (%);</li> <li>• Project Primary Fuel Type;</li> <li>• Description of Primary Fuel Type;</li> <li>• Primary Fuel Energy Density, if applicable;</li> <li>• Units for Primary Fuel Energy Density, if applicable;</li> <li>• Annual Primary Fuel Production Capacity (unit/year);</li> <li>• Project Primary Fuel Carbon Intensity (gCO<sub>2</sub>e/MJ), optional or required;</li> <li>• Primary Fuel Energy Economy Ratio, if applicable;</li> <li>• Baseline Primary Fuel Type, optional or required;</li> <li>• Project Secondary Fuel Type, optional;</li> <li>• Description of Secondary Fuel Type, if applicable;</li> <li>• Secondary Fuel Energy Density, if applicable;</li> <li>• Units for Secondary Fuel Energy Density, if applicable;</li> <li>• Annual Secondary Fuel Production Capacity (unit/year), if applicable;</li> <li>• Project Secondary Fuel Carbon Intensity (gCO<sub>2</sub>e/MJ), optional or required if applicable;</li> <li>• Secondary Fuel Energy Economy Ratio, if applicable;</li> <li>• Baseline Secondary Fuel Type, optional or required if applicable;</li> <li>• Project Tertiary Fuel Type, optional;</li> <li>• Description of Tertiary Fuel Type, if applicable;</li> <li>• Tertiary Fuel Energy Density, if applicable;</li> <li>• Units for Tertiary Fuel Energy Density, if applicable;</li> <li>• Annual Tertiary Fuel Production Capacity (unit/year), if applicable;</li> <li>• Project Tertiary Fuel Carbon Intensity (gCO<sub>2</sub>e/MJ), optional or required if applicable;</li> <li>• Tertiary Fuel Energy Economy Ratio, if applicable;</li> <li>• Baseline Tertiary Fuel Type, optional or required if applicable;</li> <li>• Onsite Stationary Natural Gas Usage [Fossil and Renewable] (therm/year);</li> <li>• RNG Production for Stationary End Uses, if applicable (therm/year);</li> <li>• Percentage of Onsite Use of RNG Produced for Stationary End Use, if applicable (therm/year);</li> <li>• Type of Onsite Electricity Generation using Produced RNG, if applicable (therm/year);</li> <li>• Onsite Stationary Electricity Usage [Grid-Sourced Only] (kWh/year);</li> <li>• Renewable Electricity Generation for Stationary End Use, if applicable (kWh/year);</li> <li>• Organic Waste Conversion Rate, if applicable (tons/gallon of primary fuel), optional; and</li> <li>• Water Savings (gallons/year), if applicable, optional.</li> </ul>

**Quantification Inputs (Inputs\_Distribution worksheet)**

- Percentage of Onsite Use of Primary Fuel (%);
- Primary Fuel Distribution Method;
- Distribution Vehicle Fuel Type;
- Quantity of Primary Fuel Transported per Vehicle Trip (unit/year);
- Distribution Distance (miles);
- Percentage of Onsite Use of Secondary Fuel (%), if applicable;
- Secondary Fuel Distribution Method, if applicable;
- Distribution Vehicle Fuel Type, if applicable;
- Quantity of Secondary Fuel Transported per Vehicle Trip (unit/year), if applicable;
- Distribution Distance (miles), if applicable;
- Percentage of Onsite Use of Tertiary Fuel (%), if applicable;
- Tertiary Fuel Distribution Method, if applicable;
- Distribution Vehicle Fuel Type, if applicable;
- Quantity of Tertiary Fuel Transported per Vehicle Trip (unit/year), if applicable; and
- Distribution Distance (miles), if applicable.

**Quantification Inputs (Inputs\_RNG worksheet)**

- Type of RNG system, if applicable;
- Anaerobic Digestion System, if applicable;
- Distance between the Dairy Cluster to a Central Biogas Processing Station, if applicable (Miles), if applicable;
- Type of Vehicle Fuel Used to Truck Raw Biogas from the Dairy Cluster to a Central Biogas Processing Station, if applicable;
- Annual Number of Trips to Truck Raw Biogas between the Dairy Cluster to a Central Biogas Processing Station, if applicable (Trips/Year);
- RNG use in a Low NO<sub>x</sub> Vehicle, if applicable;
- Solid Separation (Baseline), if applicable;
- Solid Separation (Project), if applicable;
- Practice for Separated Solids from Non-Anaerobic Treatment/Storage (Baseline), if applicable;
- Practice for Separated Solids from Non-Anaerobic Treatment/Storage (Project), if applicable;
- Practice for Separated Solids from Other Non-Anaerobic Treatment/Storage (Baseline), if applicable;
- Practice for Separated Solids from Other Non-Anaerobic Treatment/Storage (Project), if applicable;
- Dairy Cows (freestall) - Number of livestock, if applicable;
- Dairy Cows (freestall) - Baseline % VS sent to any other non-anaerobic treatment/storage, if applicable;
- Dairy Cows (freestall) - Project % VS sent to any other non-anaerobic treatment/storage, if applicable;
- Dairy Cows (open lot corrals) - Number of livestock, if applicable;
- Dairy Cows (open lot corrals) - Baseline % VS sent to any other non-anaerobic treatment/storage, if applicable;
- Dairy Cows (open lot corrals) - Project % VS sent to any other non-anaerobic treatment/storage, if applicable;



<ul style="list-style-type: none"> <li>• Dry cows - Number of livestock, if applicable;</li> <li>• Dry cows - Baseline % VS sent to any other non-anaerobic treatment/storage, if applicable;</li> <li>• Dry cows - Project % VS sent to any other non-anaerobic treatment/storage, if applicable;</li> <li>• Heifers - Number of livestock, if applicable;</li> <li>• Heifers - Baseline % VS sent to any other non-anaerobic treatment/storage, if applicable; and</li> <li>• Heifers - Project % VS sent to any other non-anaerobic treatment/storage, if applicable.</li> </ul>
<p><b>Quantification Inputs (Inputs_Lifetime Production worksheet)</b></p> <ul style="list-style-type: none"> <li>• Primary Fuel (%);</li> <li>• Secondary Fuel, if applicable (%);</li> <li>• Tertiary Fuel, if applicable (%);</li> <li>• Renewable Natural Gas, if applicable (%); and</li> <li>• Renewable Electricity, if applicable (%).</li> </ul>
<p><b>Quantification Inputs (Inputs_AB1550 worksheet)</b></p> <ul style="list-style-type: none"> <li>• Will the project increase residential, commercial, public-sector or industrial energy efficiency or renewable energy generation?;</li> <li>• Will the project divert waste from landfills, forestry, or agricultural operations to other productive uses?;</li> <li>• Will the project directly benefit priority populations by providing jobs or jobs training, using GGRF funds for labor and/or training?;</li> <li>• Step 1 – Identify the Priority Population(s);</li> <li>• Step 2 – Address a Need (Questions A – D);</li> <li>• Step 3 – Provide a Benefit (Questions A1 – C1);</li> <li>• Step 3 – Provide a Benefit (Questions A2 – D2), if applicable;</li> <li>• Step 3 – Provide a Benefit (Questions A3 – C3), if applicable; and</li> <li>• Step 3 – Provide a Benefit (Questions A4 – C4), if applicable.</li> </ul>

**Table 3. Required LCFPP Benefits Calculator Tool Inputs  
for Facility Expansion Project Types**

FACILITY EXPANSION
<p><b>Quantification Inputs (Inputs_Production Facility worksheet)</b></p> <ul style="list-style-type: none"> <li>• Project Type;</li> <li>• Date Operational;</li> <li>• Project Life (years);</li> <li>• Annual Facility Uptime (%);</li> <li>• Project Primary Fuel Type;</li> <li>• Description of Primary Fuel Type;</li> <li>• Primary Fuel Energy Density, if applicable;</li> <li>• Units for Primary Fuel Energy Density, if applicable;</li> <li>• Annual Primary Fuel Production Capacity (unit/year);</li> <li>• Project Primary Fuel Carbon Intensity (gCO<sub>2</sub>e/MJ), optional or required;</li> <li>• Primary Fuel Energy Economy Ratio, if applicable;</li> <li>• Baseline Primary Fuel Type, optional or required;</li> <li>• Project Secondary Fuel Type, optional;</li> <li>• Description of Secondary Fuel Type, if applicable;</li> <li>• Secondary Fuel Energy Density, if applicable;</li> <li>• Units for Secondary Fuel Energy Density, if applicable;</li> <li>• Annual Secondary Fuel Production Capacity (unit/year), if applicable;</li> <li>• Project Secondary Fuel Carbon Intensity (gCO<sub>2</sub>e/MJ), optional or required if applicable;</li> <li>• Secondary Fuel Energy Economy Ratio, if applicable;</li> <li>• Baseline Secondary Fuel Type, optional or required if applicable;</li> <li>• Project Tertiary Fuel Type, optional;</li> <li>• Description of Tertiary Fuel Type, if applicable;</li> <li>• Tertiary Fuel Energy Density, if applicable;</li> <li>• Units for Tertiary Fuel Energy Density, if applicable;</li> <li>• Annual Tertiary Fuel Production Capacity (unit/year), if applicable;</li> <li>• Project Tertiary Fuel Carbon Intensity (gCO<sub>2</sub>e/MJ), optional or required if applicable;</li> <li>• Tertiary Fuel Energy Economy Ratio, if applicable;</li> <li>• Baseline Tertiary Fuel Type, optional or required if applicable;</li> <li>• Onsite Stationary Natural Gas Usage [Fossil and Renewable] (therm/year);</li> <li>• Onsite Stationary Natural Gas Savings (therm/year), if applicable;</li> <li>• Onsite RNG Substitution (therm/year), if applicable;</li> <li>• RNG Production for Stationary End Uses, if applicable (therm/year);</li> <li>• Percentage of Onsite Use of RNG Produced for Stationary End Use, if applicable (therm/year);</li> <li>• Type of Onsite Electricity Generation using Produced RNG, if applicable (therm/year);</li> <li>• Onsite Stationary Electricity Usage [Grid-Sourced Only] (kWh/year);</li> <li>• Onsite Stationary Electricity Gas Savings [Grid-Sourced Only] (therm/year), if applicable;</li> <li>• Renewable Electricity Generation for Stationary End Use, if applicable (kWh/year);</li> <li>• Organic Waste Conversion Rate, if applicable (tons/gallon of primary fuel), optional; and</li> <li>• Water Savings, if applicable (gallons/year), optional.</li> </ul>

**Quantification Inputs (Inputs\_Distribution worksheet)**

- Percentage of Onsite Use of Primary Fuel (%);
- Primary Fuel Distribution Method;
- Distribution Vehicle Fuel Type;
- Quantity of Primary Fuel Transported per Vehicle Trip (unit/year);
- Distribution Distance (miles);
- Percentage of Onsite Use of Secondary Fuel (%), if applicable;
- Secondary Fuel Distribution Method, if applicable;
- Distribution Vehicle Fuel Type, if applicable;
- Quantity of Secondary Fuel Transported per Vehicle Trip (unit/year), if applicable;
- Distribution Distance (miles), if applicable;
- Percentage of Onsite Use of Tertiary Fuel (%), if applicable;
- Tertiary Fuel Distribution Method, if applicable;
- Distribution Vehicle Fuel Type, if applicable;
- Quantity of Tertiary Fuel Transported per Vehicle Trip (unit/year), if applicable; and
- Distribution Distance (miles), if applicable.

**Quantification Inputs (Inputs\_RNG worksheet)**

- Type of RNG system, if applicable;
- Anaerobic Digestion System, if applicable;
- Distance between the Dairy Cluster to a Central Biogas Processing Station, if applicable (Miles), if applicable;
- Type of Vehicle Fuel Used to Truck Raw Biogas from the Dairy Cluster to a Central Biogas Processing Station, if applicable;
- Annual Number of Trips to Truck Raw Biogas between the Dairy Cluster to a Central Biogas Processing Station, if applicable (Trips/Year);
- RNG use in a Low NO<sub>x</sub> Vehicle, if applicable;
- Solid Separation (Baseline), if applicable;
- Solid Separation (Project), if applicable;
- Practice for Separated Solids from Non-Anaerobic Treatment/Storage (Baseline), if applicable;
- Practice for Separated Solids from Non-Anaerobic Treatment/Storage (Project), if applicable;
- Practice for Separated Solids from Other Non-Anaerobic Treatment/Storage (Baseline), if applicable;
- Practice for Separated Solids from Other Non-Anaerobic Treatment/Storage (Project), if applicable;
- Dairy Cows (freestall) - Number of livestock, if applicable;
- Dairy Cows (freestall) - Baseline % VS sent to any other non-anaerobic treatment/storage, if applicable;
- Dairy Cows (freestall) - Project % VS sent to any other non-anaerobic treatment/storage, if applicable;
- Dairy Cows (open lot corrals) - Number of livestock, if applicable;
- Dairy Cows (open lot corrals) - Baseline % VS sent to any other non-anaerobic treatment/storage, if applicable;
- Dairy Cows (open lot corrals) - Project % VS sent to any other non-anaerobic treatment/storage, if applicable;

<ul style="list-style-type: none"> <li>• Dry cows - Number of livestock, if applicable;</li> <li>• Dry cows - Baseline % VS sent to any other non-anaerobic treatment/storage, if applicable;</li> <li>• Dry cows - Project % VS sent to any other non-anaerobic treatment/storage, if applicable;</li> <li>• Heifers - Number of livestock, if applicable;</li> <li>• Heifers - Baseline % VS sent to any other non-anaerobic treatment/storage, if applicable; and</li> <li>• Heifers - Project % VS sent to any other non-anaerobic treatment/storage, if applicable.</li> </ul>
<p><b>Quantification Inputs (Inputs_Lifetime Production worksheet)</b></p> <ul style="list-style-type: none"> <li>• Primary Fuel (%);</li> <li>• Secondary Fuel, if applicable (%);</li> <li>• Tertiary Fuel, if applicable (%);</li> <li>• Renewable Natural Gas, if applicable (%); and</li> <li>• Renewable Electricity, if applicable (%).</li> </ul>
<p><b>Quantification Inputs (Inputs_AB1550 worksheet)</b></p> <ul style="list-style-type: none"> <li>• Will the project increase residential, commercial, public-sector or industrial energy efficiency or renewable energy generation?;</li> <li>• Will the project divert waste from landfills, forestry, or agricultural operations to other productive uses?;</li> <li>• Will the project directly benefit priority populations by providing jobs or jobs training, using GGRF funds for labor and/or training?;</li> <li>• Step 1 – Identify the Priority Population(s);</li> <li>• Step 2 – Address a Need (Questions A – D);</li> <li>• Step 3 – Provide a Benefit (Questions A1 – C1);</li> <li>• Step 3 – Provide a Benefit (Questions A2 – D2), if applicable;</li> <li>• Step 3 – Provide a Benefit (Questions A3 – C3), if applicable; and</li> <li>• Step 3 – Provide a Benefit (Questions A4 – C4), if applicable.</li> </ul>

### Step 3: Estimate GHG Emission Reductions and Selected Co-benefits for the Proposed Project Using the LCFPP Benefits Calculator Tool

Applicants must use the LCFPP Benefits Calculator Tool to complete this step. The LCFPP Benefits Calculator Tool can be downloaded from: [www.arb.ca.gov/cc-resources](http://www.arb.ca.gov/cc-resources).

Users should begin with the **Read Me** tab, which contains general information about the Benefits Calculator Tool. Key terms used throughout the LCFPP Benefits Calculator Tool are defined in the **Definitions&Conversions** tab. The **Documentation** tab provides details on the documentation requirements to allow the calculations to be reviewed and replicated.

The **Project Info** tab prompts users to enter general project information.

The **Inputs** tabs identifies inputs required by the user, generally requiring project-specific data or assumptions. Input and output fields are color coded:

- **Green** fields indicate direct user input is required.
- **Blue** fields are optional and user input is not required.
- **Grey** fields indicate output or calculation fields that are automatically populated based on user entries and the calculation methods.
- **Yellow** fields offer helpful hints or important tips to the user.
- **Black** fields are not applicable and no user input is necessary.

Applicants will follow the steps outlined in Figure 2 to input information into the LCFPP Benefits Calculator Tool's various **Inputs** tabs.

If an optional field is used, the applicant must submit additional supporting documentation (see the **Documentation** tab in the LCFPP Benefits Calculator Tool).

The **Definitions&Conversions** tab includes a conversion calculator for RNG to standardize user inputs.

**Figure 2. Work Flow for Step 3 to Estimate the GHG Emission Reductions and Selected Co-benefits for the Proposed Project Using the LCFPP Benefits Calculator Tool**

**Step 3a.** Provide information about the applicant and funding request using the 'Project Info' tab.



**Step 3b.** Provide information about the proposed fuel production facility using the 'Inputs\_Production Facility' tab.



**Step 3c.** Provide information about how the fuel produced from the facility will be distributed using the 'Inputs\_Distribution' tab.



**Step 3d.** If the project produces RNG for a transportation fuel or stationary purposes, provide further information about the RNG production system using the 'Inputs\_RNG' tab. If the project does not produce RNG, skip to **Step 3e**.



**Step 3e.** Provide information about expected facility operation ramp-up to full production using the 'Inputs\_Lifetime Production' tab.



**Step 3f.** Provide information about how the project may provide benefits to priority populations using the 'Inputs\_AB1550' tab.

The **GHG Summary** tab displays the estimated:

- Total LCFPP GHG emission reductions (metric tons of carbon dioxide equivalent (MTCO<sub>2e</sub>); <sup>2</sup>
- Total GHG emission reductions (MTCO<sub>2e</sub>);
- Total GHG emission reductions per total LCFPP GGRF funds (MTCO<sub>2e</sub>/\$million);
- Total GHG emission reductions per total GGRF funds (MTCO<sub>2e</sub>/\$million); and
- Total GHG emission reductions per total funds (MTCO<sub>2e</sub>/\$million).

The **Co-benefits Summary** tab displays the estimated:

- Fossil Fuel Use Reductions (gallons);
- Renewable Fuel Production (gallons);
- Fossil Fuel Energy Use Reductions (kWh or therm);
- Renewable Energy Generation (kWh);
- Material Diverted from Landfill (tons);
- Water Savings (gallons);
- Local, Remote, and Total NO<sub>x</sub> emission reductions (lbs);
- Local, Remote, and Total ROG emission reductions (lbs);
- Local, Remote, and Total PM<sub>2.5</sub> emission reductions (lbs); and
- Local, Remote, and Total Diesel PM emission reductions (lbs).

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<sup>2</sup> This is the portion of GHG emission reductions attributable to funding from LCFPP; GHG emission reductions are prorated according to the level of program funding contributed from LCFPP and other California Climate Investments programs funded with GGRF, as applicable. The results in the Co-benefits Summary tab are prorated using the same approach, as applicable.

## Section C. Example Project #1

### Introduction

The following is a hypothetical project<sup>3</sup> to demonstrate how the LCFPP Benefits Calculator Tool would be applied. This hypothetical project does not provide examples of the supporting documentation that is required of actual project applicants.

### Overview of the proposed project

The proposed project is a New Facility project type with the following features:

- Install additional biodiesel production capacity at an existing biodiesel production facility.
- Increase the production capacity by 5,000,000 gallons per year of biodiesel.
- The facility is expected to be operational for 7 years.
- The facility will shut down for 11 days each year for maintenance, equating to an uptime of 97% based upon a 365-day calendar.
- The project expects to produce biodiesel from California-sourced tallow, similar to an approved Low Carbon Fuel Standard (LCFS) pathway with a carbon intensity of 28.45 gCO<sub>2</sub>e/MJ.
- The project will ramp up the new biodiesel production from 65% in the first year, to 80% in the second year, 90% in the third year, and 100% in all years after.
- No other fuels, renewable electricity, or renewable natural gas are expected to be co-produced by the project.
- The facility is expected to consume 6,500 therms per year of natural gas, and 72,000 kwh per year to operate.
- The biodiesel produced from the facility will be transported by diesel tanker truck to a blending terminal that is 60 miles from the production facility.
- The project is located in a disadvantaged and low-income community, and will host community meetings as part of the planning process.

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<sup>3</sup> The hypothetical project has not undergone verification of any LCFPP requirements; all assumptions about location type and project features are for LCFPP Benefits Calculator Tool demonstration purposes only.



## Methods to apply

### Step 1: Define the Project

General Information (Project Info Tab)	
<ul style="list-style-type: none"> <li>• Project Name: California Fuel Producer, Inc.</li> <li>• Contact Name: John Smith</li> <li>• Contact Phone Number: (916) 555-1234</li> <li>• Contact Email: <a href="mailto:john.smith@cfp.com">john.smith@cfp.com</a></li> <li>• Date Calculator Completed: 6/25/2019</li> <li>• Total LCFPP GGRF Funds Requested (\$): \$4,000,000</li> <li>• Other GGRF Leveraged Funds (\$): \$0</li> <li>• Non-GGRF Leveraged Funds (\$): \$5,500,000</li> </ul>	

Project Name:	California Fuel Producer, Inc.
Project ID:	<i>To be completed by CEC</i>
Applicant ID:	<i>To be completed by CEC</i>
Contact Name:	John Smith
Contact Phone Number:	(916) 555-1234
Contact Email:	<a href="mailto:john.smith@cfp.com">john.smith@cfp.com</a>
Date Calculator Completed:	6/25/2019
Total LCFPP GGRF Funds Requested (\$):	\$4,000,000
Other GGRF Leveraged Funds (\$):	
Non-GGRF Leveraged Funds (\$):	\$5,500,000
Total Funds (i.e., Total Project Cost) (\$):	\$9,500,000

## Step 2: Determine the LCFPP Benefits Calculator Tool Inputs Needed

Enter the project information into the LCFPP Calculator Tools **Inputs\_Production Facility** tab to estimate GHG emission reductions and other benefits from the fuel production process.

Inputs			Required	Description
This section is used to determine basic project information.				
Project Type	New Facility		Yes	The type of project proposed.
Date Operational (MM/DD/YY)	1/10/2022		Yes	The date when the facility is expected to become operational and start producing fuel for sale.
Project Life (Years)	7		Yes	The number of years the facility is expected to be operational.
Annual Facility Uptime (%)	97%		Yes	The percentage of hours in a year that the facility is typically expected to be operational, factoring in planned and unexpected downtime.
This section is used to determine the emission factors to use to estimate emissions for production of the primary transportation fuel.				
Project Primary Fuel Type	Biodiesel		Yes	The main type of transportation fuel expected to be produced by the project.
Description of Primary Fuel Type	Biodiesel from tallow		Yes	Text description providing additional clarification about the type of primary fuel (e.g., cellulosic ethanol, dairy biomethane, DME, etc.).
Primary Fuel Energy Density			No	Not applicable for this project type
Units for Primary Fuel Energy Density			No	Not applicable for this project type
Annual Primary Fuel Production Capacity (gallon/year)	5,000,000	gallon/year	Yes	The annual primary fuel production capacity of the proposed project, assuming 24/7 operation.
Project Primary Fuel Carbon Intensity (gCO2e/MJ)	28.45		Optional	The Carbon Intensity (CI) of the primary fuel expected to be produced by the project.
Primary Fuel Energy Economy Ratio (EER)			No	Not applicable for this project type
Baseline Primary Fuel Type			Optional	The type of fuel that is expected to be displaced by the project's primary fuel.
This section is used to estimate emissions for stationary natural gas usage and renewable natural gas production, if applicable.				
Onsite Stationary Natural Gas Usage [Fossil and Renewable] (therm/year)	6,500		Yes	Annual expected fossil and renewable natural gas consumption for onsite stationary uses at the new production facility. Do not include RNG produced from the project that is used to generate renewable electricity; this is quantified below.
Onsite Stationary Natural Gas Savings (therm/year)			No	
Onsite RNG Substitution (therm/year)			No	
RNG Production for Stationary End Uses, if applicable (therm/year)			Optional	The annual amount of renewable natural gas generated by the proposed project at full production capacity, for use in stationary applications.
Percentage of Onsite Use of RNG Produced for Stationary End Use, if applicable (therm/year)			No	The percentage of renewable gas production for stationary end uses, provided in the row above, that will be used onsite at the fuel production facility (not transported for offsite use).
Type of Onsite Electricity Generation using Produced RNG, if applicable (therm/year)			No	The technology used for onsite electricity generation using the renewable natural gas that is produced from the project.
Estimated Onsite Electricity Generation from RNG (kWh/year)			No	Calculated estimate of renewable electricity generated onsite from RNG, which should inform input in Row 56.

This section is used to estimate emissions for stationary electricity usage and renewable electricity generation, if applicable.			
Onsite Stationary Electricity Usage [Grid-Sourced Only] (kWh/year)	72,000	Yes	Annual expected grid electricity consumption for onsite stationary uses at the new production facility.
Onsite Stationary Electricity Gas Savings [Grid-Sourced Only] (therm/year)		No	
Renewable Electricity Generation for Stationary End Use, if applicable (kWh/year)		Optional	The annual amount of renewable electricity generated by the proposed project at full production capacity, for use in stationary applications.

Enter the project information into the LCFPP Calculator Tools **Inputs\_Distribution** tab to estimate GHG emissions from fuel distribution.

Inputs	Required	Description	
This section is used to determine the emission factors to use to estimate emissions for distribution of the primary transportation fuel.			
Percentage of Onsite Use of Primary Fuel (%)	0%	Yes	The percentage of primary fuel produced by the facility that will be used for onsite fueling.
Primary Fuel Distribution Method	Onroad Tanker Truck	Yes	The mode in which the primary fuel would be distributed from the production facility to a terminal or offsite fueling station.
Distribution Vehicle Fuel Type	Diesel	Yes	The type of fuel used by the vehicle that distributes the primary fuel.
Quantity of Primary Fuel Transported per Vehicle Trip (gallon/trip)	9,000	Yes	The amount of fuel that the distribution vehicle is able to transport per trip.
Distribution Distance (miles)	60	Yes	The average distance between the fuel production facility and an end destination for the primary fuel (e.g., blending terminal or offsite fueling station).

Enter the project information into the LCFPP Calculator Tools **Inputs\_Lifetime Production** tab to define the quantification periods.

Transportation Fuel	Reporting Years				
	Year 1	Year 2	Year 3	Year 4	Year 5
Primary Fuel: Biodiesel	65%	80%	90%	100%	100%
Secondary Fuel: N/A					
Tertiary Fuel: N/A					
Stationary Fuel	Year 1	Year 2	Year 3	Year 4	Year 5
Renewable Natural Gas					
Renewable Electricity					

Enter the project information into the LCFPP Calculator Tools **Inputs\_AB1550** tab to estimate benefits to priority populations.

Additional Project Benefits	
Will the project increase residential, commercial, public-sector or industrial energy efficiency or renewable energy generation?	No
Will the project divert waste from landfills, forestry, or agricultural operations to other	No
Will the project directly benefit priority populations by providing jobs or jobs training, using GGRF funds for labor and/or training?	No

Inputs	Required	Description
Step 1 - Identify the Priority Population(s)		
Disadvantaged and Low-Income Community	Yes	Is the project located within a disadvantaged community census tract, low-income community, both disadvantaged and low-income community, buffer zone, or none of the above? Use the AB 1550 mapping tool available at: <a href="https://www.arb.ca.gov/cc/capandtrade/auctionproceed">https://www.arb.ca.gov/cc/capandtrade/auctionproceed</a>
	No	
Step 2 - Address a Need		
Yes	Yes	<b>A. Recommended Approach:</b> Host community meetings, workshops, outreach efforts, or public meetings as part of the planning process to engage local residents and community groups for input on community or household needs, and document how the received input was considered in the design and/or selection of projects to address those needs.
No	Yes	<b>B. Recommended Approach:</b> Receive documentation of support from local community-based organizations and/or residents (e.g., letters, emails) identifying a need that the project addresses and demonstrating that the project has broad
No	Yes	<b>C. Alternative Approach:</b> Where direct engagement is infeasible, look at the individual factors in CalEnviroScreen that are most impacting an identified disadvantaged or low-income community (i.e., factors that score above the 75th percentile), and confirm that the project will reduce the impacts of at least one of those factors.
No	Yes	<b>D. Alternative Approach:</b> Where direct engagement is infeasible, refer to the list of common needs for priority populations in CARB's Funding Guidelines Table 5 and confirm that the project addresses at least one listed need.
Step 3 - Provide a Benefit		
No	Yes	<b>A1.</b> Project provides incentives for vehicles, equipment, or renewable transportation fuel that reduce criteria air pollutant or toxic air contaminant emissions, such as diesel particulate matter.
No	Yes	<b>B1.</b> Project provides greater mobility and increased access to clean transportation for residents of a disadvantaged or low-income community by placing services in that community, including ride-sharing, car-sharing, or other advanced technology mobility options (e.g., neighborhood electric vehicles, vanpooling, shuttles, smartphone application-based ride-sharing services, bike-sharing services).
No	Yes	<b>C1.</b> Project provides greater mobility and increased access to clean transportation for residents of a disadvantaged or low-income community, or a low-income household, by providing incentives for the retirement or replacement of older, higher-emitting

At the bottom of the **Inputs\_AB1550** tab is a summary table that indicates, based upon the inputs, whether the project may meet the Step 1 – 3 criteria for claiming that the project provides benefits to priority populations, per AB 1550. However, final determination for deciding whether the project may claim benefits for AB 1550 relies upon staff evaluation.

AB 1550 Eligibility Summary	
Does the project meet Step 1?	Yes
Does the project meet Step 2?	Yes
Does the project meet Step 3 (corresponding to Step 1)?	No
Does the project potentially provide benefits to priority populations?	No

### Step 3: Estimate GHG Emission Reductions and Selected Co-benefits for the Proposed Project Using the LCFPP Benefits Calculator Tool

The **GHG Summary** tab displays the Total GHG Emission Reductions per Total LCFPP GGRF Funds and per Total GGRF Funds. GHG emission reductions are prorated according to the level of program funding contributed from LCFPP and other California Climate Investments programs, as applicable.

Project Information		
Project Name	California Fuel Producer, Inc.	
Total LCFPP GGRF Funds Requested (\$)	\$	4,000,000
Other GGRF Leveraged Funds (\$)	\$	-
Non-GGRF Leveraged Funds (\$)	\$	5,500,000
Total Funds (\$)	\$	9,500,000

GHG Summary		
Total LCFPP GHG Emission Reductions (MTCO <sub>2</sub> e)		191,594
Total GHG Emission Reductions (MTCO <sub>2</sub> e)		191,594
Total GHG Emission Reductions per LCFPP GGRF Funds (MTCO <sub>2</sub> e/\$million)		47,898
Total GHG Emission Reductions per GGRF Funds (MTCO <sub>2</sub> e/\$million)		47,898
Total GHG Emission Reductions per Total Funds (MTCO <sub>2</sub> e/\$million)		20,168

The **Co-benefits Summary** tab displays the key variables and air pollutant emission estimates from the project. Key variables and air pollutant emission estimates are also prorated according to the level of program funding contributed from LCFPP and other California Climate Investments programs, as applicable.

Co-benefits and Key Variables Summary				
				LCFPP GGRF Funds
Fossil Fuel Use Reductions (gallons)				19,789,006
Renewable Fuel Generation (gallons)				21,097,500
Fossil Fuel Energy Use Reductions (kWh or therm)			kWh	therm
Renewable Energy Generation (kWh)				
Water Savings (gallons)				
Material Diverted from Landfill (tons)				
<b>Criteria and Toxic Air Pollutant Emission Reductions</b>	<b>Local</b>	<b>Remote</b>	<b>Total</b>	
NOx emission reductions (lbs)	-331	-2,460	-2,791	
ROG emission reductions (lbs)	-22	-89	-111	
PM2.5 emission reductions (lbs)	-20	-45	-66	
Diesel PM emission reductions (lbs)	0	-14	-14	
				Total
Fossil Fuel Use Reductions (gallons)				19,789,006
Renewable Fuel Generation (gallons)				21,097,500
Fossil Fuel Energy Use Reductions (kWh or therm)			kWh	therm
Renewable Energy Generation (kWh)				
Material Diverted from Landfill (tons)				
Water Savings (gallons)				
<b>Criteria and Toxic Air Pollutant Emission Reductions</b>	<b>Local</b>	<b>Remote</b>	<b>Total</b>	
NOx emission reductions (lbs)	-331	-2,460	-2,791	
ROG emission reductions (lbs)	-22	-89	-111	
PM2.5 emission reductions (lbs)	-20	-45	-66	
Diesel PM emission reductions (lbs)	0	-14	-14	

## Section D. Example Project #2

### Introduction

The following is a hypothetical project<sup>4</sup> to demonstrate how the LCFPP Benefits Calculator Tool would be applied. This hypothetical project does not provide examples of the supporting documentation that is required of actual project applicants.

### Overview of the proposed project

The proposed project is a Facility Expansion project type with the following features:

- Expansion of an existing dairy biomethane production facility, with an expected increase in annual production capacity of 1,800,000 standard cubic feet (scf) of renewable natural gas.
- Of the 1,800,000 scf per year of new renewable natural gas production:
  - 1,000,000 scf will be used as RNG transportation fuel;
  - 250,000 scf will be converted into 2,000 kg of hydrogen transportation fuel;
  - 200,000 scf will be converted into 1,800 gallons of DME transportation fuel; and
  - 50,000 scf (= 510 therms) will displace existing natural gas use from current facility operations;
  - The remaining 300,000 scf (= 3,060 therms) will be used onsite for electricity generation using a microturbine.
- The facility is expected to be operational for 12 years, beginning August 1, 2024.
- The facility will shut down for 18 days each year for maintenance, equating to an uptime of 95% based upon a 365-day calendar.
- The project expects to produce RNG from dairy manure in covered anaerobic lagoons, similar to an approved Low Carbon Fuel Standard (LCFS) pathway with a carbon intensity of -276.24 gCO<sub>2</sub>e/MJ.
- The hydrogen fuel is expected to have a carbon intensity of 34.45 gCO<sub>2</sub>e/MJ.
- The DME is estimated to have a carbon intensity of -5.00 gCO<sub>2</sub>e/MJ, an EER of 1.0, and an energy density of 72.72 MJ/gallon.
- The RNG, hydrogen, and DME vehicle fuel are expected to displace fuel use in heavy duty vehicles, as indicated by offtake agreements.
- The new facility operations is expected to consume 2,750,000 kwh per year to operate.
- 80 percent of the RNG for transportation fuel will be injected into the natural gas common carrier pipeline, for use at an offsite refueling station located 60 miles away from the production facility. 20 percent will be used for RNG trucks onsite.

<sup>4</sup> The hypothetical project has not undergone verification of any LCFPP requirements; all assumptions about location type and project features are for LCFPP Benefits Calculator Tool demonstration purposes only.

- 100 percent of the hydrogen fuel will be transported offsite by diesel tanker truck (5,000 kg capacity) to a hydrogen refueling station located 150 miles away from the production facility.
- 100 percent of the DME fuel will be transported offsite by short-line rail (30,000 gallon capacity) to a processing facility located 300 miles away from the production facility
- The dairy will install a covered lagoon digester, and process raw biogas onsite.
- The RNG fuel is expected to be used in a Low NO<sub>x</sub> natural gas vehicle.
- The dairy uses weeping walls, but will install a screw press for solids separation as part of the project.
- Separated solids are currently being used for daily spread, but will composted in an aerated static pile once the project is implemented.
- The dairy consists of 500 freestall dairy cows, 200 dairy cows in open lot corrals, 50 dry cows, and 20 heifers.
- The project will ramp up renewable natural gas transportation fuel production from 90% in the first year, to 95% in the second year, and 100% in all years after.
- The project will ramp up hydrogen and DME production from 0% in the first year, to 65% in the second year, 85% in the third year, and 95% in all years after.
- The project will reduce renewable natural gas production for stationary electricity generation from 100% in the first year, to 80% in the second year, and 75% in all years after.
- The project is located in a disadvantaged community, and has received documented support from local community members that the project will address local challenges and issues.
- The project will include a program to hire employees from the local community, and provide certified training.

## Methods to apply

### Step 1: Define the Project

General Information (Project Info Tab)
<ul style="list-style-type: none"> <li>• Project Name: RNG Production Company</li> <li>• Contact Name: Jane Smith</li> <li>• Contact Phone Number: (916) 123-4567</li> <li>• Contact Email: <a href="mailto:jane.smith@RNGpc.com">jane.smith@RNGpc.com</a></li> <li>• Date Calculator Completed: 2/2/2021</li> <li>• Total LCFPP GGRF Funds Requested (\$): \$3,500,000</li> <li>• Other GGRF Leveraged Funds (\$): \$2,000,000</li> <li>• Non-GGRF Leveraged Funds (\$): \$6,500,000</li> </ul>



Project Name:	RNG Production Company	
Project ID:	To be completed by CEC	
Applicant ID:	To be completed by CEC	
Contact Name:	Jane Smith	
Contact Phone Number:	(916) 123-4567	
Contact Email:	jane.smith@RNGpc.com	
Date Calculator Completed:	2/2/2021	
Total LCFPP GGRF Funds Requested (\$):	\$	3,500,000
Other GGRF Leveraged Funds (\$):	\$	2,000,000
Non-GGRF Leveraged Funds (\$):	\$	6,500,000
Total Funds (i.e., Total Project Cost) (\$):	\$	12,000,000

## Step 2: Determine the LCFPP Benefits Calculator Tool Inputs Needed

Enter the project information into the LCFPP Calculator Tools **Inputs\_Production Facility** tab to estimate GHG emission reductions and other benefits from the fuel production process.

Inputs		Required	Description
This section is used to determine basic project information.			
<b>Project Type</b>	Facility Expansion	Yes	The type of project proposed.
<b>Date Operational</b>	8/1/2024	Yes	The date when the facility is expected to become operational and start producing fuel for sale.
<b>Project Life (Years)</b>	12	Yes	The number of years the facility is expected to be operational.
<b>Annual Facility Uptime (%)</b>	95%	Yes	The percentage of hours in a year that the facility is typically expected to be operational, factoring in planned and unexpected downtime.
This section is used to determine the emission factors to use to estimate emissions for production of the primary transportation fuel.			
<b>Project Primary Fuel Type</b>	RNG	Yes	The main type of transportation fuel expected to be produced by the project.
<b>Description of Primary Fuel Type</b>	RNG from dairy digester	Yes	Text description providing additional clarification about the type of primary fuel (e.g., cellulosic ethanol, dairy biomethane, DME, etc.).
<b>Primary Fuel Energy Density</b>		No	Not applicable for this project type
<b>Units for Primary Fuel Energy Density</b>		No	Not applicable for this project type
<b>Annual Primary Fuel Production Capacity (ft3/year)</b>	1,000,000 ft3/year	Yes	The amount of annual primary fuel production capacity expected to be added by the project, assuming operation at full production capacity.
<b>Project Primary Fuel Carbon Intensity (gCO2e/MJ)</b>	-276.24	Optional	The Carbon Intensity (CI) of the primary fuel expected to be produced by the project.
<b>Primary Fuel Energy Economy Ratio (EER)</b>		No	Not applicable for this project type
<b>Baseline Primary Fuel Type</b>	Diesel	Optional	The type of fuel that is expected to be displaced by the project's primary fuel.



This section is used to determine the emission factors to use to estimate emissions for production of a second transportation fuel, if applicable.				
<b>Project Secondary Fuel Type</b>	Hydrogen		Optional	A second type of transportation fuel expected to be produced by the project, if applicable.
<b>Description of Secondary Fuel Type</b>	Hydrogen from RNG from dairy digester		Yes	Text description providing additional clarification about the type of secondary fuel (e.g., cellulosic ethanol, dairy biomethane, DME, etc.).
<b>Secondary Fuel Energy Density</b>			No	Not applicable for this project type
<b>Units for Secondary Fuel Energy Density</b>			No	Not applicable for this project type
<b>Annual Secondary Fuel Production Capacity (kg/year)</b>	2,000	kg/year	Yes	The amount of annual secondary fuel production capacity expected to be added by the project, assuming operation at full production capacity.
<b>Project Secondary Fuel Carbon Intensity (gCO<sub>2</sub>e/MJ)</b>	34.45		Optional	The Carbon Intensity (CI) of the secondary fuel expected to be produced by the project.
<b>Secondary Fuel Energy Economy Ratio (EER)</b>			No	Not applicable for this project type
<b>Baseline Secondary Fuel Type</b>	Diesel		Optional	The type of fuel that is expected to be displaced by the project's secondary fuel.
This section is used to determine the emission factors to use to estimate emissions for production of a third transportation fuel, if applicable.				
<b>Project Tertiary Fuel Type</b>	Other #1		Optional	A third type of transportation fuel expected to be produced by the project, if applicable.
<b>Description of Tertiary Fuel Type</b>	DME		Yes	Text description providing additional clarification about the type of tertiary fuel (e.g., cellulosic ethanol, wastewater biomethane, DME, etc.).
<b>Tertiary Fuel Energy Density</b>	72.72		Yes	The energy density of the tertiary project fuel.
<b>Units for Tertiary Fuel Energy Density</b>	MJ/gallon		Yes	The unit of measurement for the fuel energy density value entered above.
<b>Annual Tertiary Fuel Production Capacity (gallon/year)</b>	1,800	gallon/year	Yes	The amount of annual tertiary fuel production capacity expected to be added by the project, assuming operation at full production capacity.
<b>Project Tertiary Fuel Carbon Intensity (gCO<sub>2</sub>e/MJ)</b>	-5.00		Yes	The Carbon Intensity (CI) of the tertiary fuel expected to be produced by the project.
<b>Tertiary Fuel Energy Economy Ratio (EER)</b>	1.0		Yes	The dimensionless ratio that represents the efficiency of the tertiary fuel as used in a powertrain as compared to a reference fuel used in the same powertrain.
<b>Baseline Tertiary Fuel Type</b>	Diesel		Yes	The type of fuel that is expected to be displaced by the project's tertiary fuel.
This section is used to estimate emissions for stationary natural gas usage and renewable natural gas production, if applicable.				
<b>Increase in Onsite Stationary Natural Gas Usage to Support New Production Capacity [Fossil and Renewable] (therm/year)</b>	0		Yes	Annual expected increase in onsite fossil and renewable natural gas consumption from the added fuel(s) production capacity. Do not include RNG produced from the project that is used to generate renewable electricity; this is quantified below.
<b>Onsite Stationary Natural Gas Savings (therm/year)</b>	0		Optional	Annual expected reductions in natural gas consumption from efficiency improvements to the existing operation(s).
<b>Onsite RNG Substitution (therm/year)</b>	510		Optional	Annual amount of renewable natural gas used to substitute the existing operation's natural gas consumption.
<b>RNG Production for Stationary End Uses, if applicable (therm/year)</b>	3,060		Optional	The annual amount of renewable natural gas generated by the proposed project at full production capacity, for use in stationary applications.
<b>Percentage of Onsite Use of RNG Produced for Stationary End Use, if applicable</b>	100%		Yes	The percentage of renewable gas production for stationary end uses, provided in the row above, that will be used onsite at the fuel production facility (not transported for offsite use).
<b>Type of Onsite Electricity Generation using Produced RNG, if applicable (therm/year)</b>	Microturbine or large gas turbine		Yes	The technology used for onsite electricity generation using the renewable natural gas that is produced from the project.
<b>Estimated Onsite Electricity Generation from RNG (kWh/year)</b>	26,905		No	Calculated estimate of renewable electricity generated onsite from RNG, which should inform input in Row 56.

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This section is used to estimate emissions for stationary electricity usage and renewable electricity generation, if applicable.			
<b>Increase in Onsite Stationary Electricity Usage to Support New Production Capacity [Grid-Sourced Only] (kWh/year)</b>	2,750,000	Yes	Annual expected increase in onsite grid electricity consumption from the added fuel(s) production capacity.
<b>Onsite Stationary Electricity Gas Savings [Grid-Sourced Only] (therm/year)</b>	0	Optional	Annual expected reductions in grid electricity consumption from efficiency improvements to the existing operation(s).
<b>Renewable Electricity Generation for Stationary End Use, if applicable (kWh/year)</b>	26,905	Yes	The annual amount of renewable electricity generated by the proposed project at full production capacity, for use in stationary applications.
This section is used to determine and estimate additional co-benefits, if applicable.			
<b>Organic Waste Conversion Rate, if applicable (tons/ft3 of primary fuel)</b>	0.000	Optional	The tonnage of organic waste feedstock (green waste, food materials, or alternative daily cover that is newly diverted from landfills) used to produce one ft3 of primary fuel.
<b>Water Savings from the Existing Operations (gallons/year)</b>	0	Optional	Annual expected reductions in water usage from the installation of more efficient water measures for the existing operation(s).

Enter the project information into the LCFPP Calculator Tools **Inputs\_Distribution** tab to estimate GHG emissions from fuel distribution.

Inputs		Required	Description
This section is used to determine the emission factors to use to estimate emissions for distribution of the primary transportation fuel.			
Percentage of Onsite Use of Primary Fuel (%)	80%	Yes	The percentage of primary fuel produced by the facility that will be used for onsite fueling.
Primary Fuel Distribution Method	Pipeline	Yes	The mode in which the primary fuel would be distributed from the production facility to a terminal or offsite fueling station.
Distribution Vehicle Fuel Type		No	The type of fuel used by the vehicle that distributes the primary fuel.
Quantity of Primary Fuel Transported per Vehicle Trip (ft3/trip)		No	The amount of fuel that the distribution vehicle is able to transport per trip.
Distribution Distance (miles)	60	Yes	The average distance between the fuel production facility and an end destination for the primary fuel (e.g., blending terminal or offsite fueling station).
This section is used to determine the emission factors to use to estimate emissions for distribution of a second transportation fuel, if applicable.			
Percentage of Onsite Use of Secondary Fuel (%)	0%	Yes	The percentage of primary fuel produced by the facility that will be used for onsite fueling.
Secondary Fuel Distribution Method	Onroad Tanker Truck	Yes	The mode in which the secondary fuel would be distributed from the production facility to a terminal or offsite fueling station.
Distribution Vehicle Fuel Type	Diesel	Yes	The type of fuel used by the vehicle that distributes the secondary fuel.
Quantity of Secondary Fuel Transported per Vehicle Trip (kg/trip)	5,000	Yes	The amount of fuel that the distribution vehicle is able to transport per trip.
Distribution Distance (miles)	150	Yes	The average distance between the fuel production facility and an end destination for the secondary fuel (e.g., blending terminal or offsite fueling station).
This section is used to determine the emission factors to use to estimate emissions for distribution of a third transportation fuel, if applicable.			
Percentage of Onsite Use of Tertiary Fuel (%)	0%	Yes	The percentage of primary fuel produced by the facility that will be used for onsite fueling.
Tertiary Fuel Distribution Method	Rail - Short Line / Class III	Yes	The mode in which the tertiary fuel would be distributed from the production facility to a terminal or offsite fueling station.
Distribution Vehicle Fuel Type		No	The type of fuel used by the vehicle that distributes the tertiary fuel.
Quantity of Tertiary Fuel Transported per Vehicle Trip (gallon/trip)	30,000	Yes	The amount of fuel that the distribution vehicle is able to transport per trip.
Distribution Distance (miles)	300	Yes	The average distance between the fuel production facility and an end destination for the tertiary fuel (e.g., blending terminal or offsite fueling station).

Enter the project information into the LCFPP Calculator Tools **Inputs\_RNG** tab to further describe the RNG production system and dairy.

Inputs		Required	Description	
This section is used to define the overall renewable natural gas production system.				
Type of RNG system	Dairy	Yes	The type of renewable natural gas production system.	
Anaerobic Digestion System	Covered Lagoon	Yes	The type of digester system used.	
Distance between the Dairy Cluster to a Central Biogas Processing Station, if applicable (Miles)	0	Yes	If raw biogas is trucked within a dairy cluster to a central biogas processing station, enter the distance between the cluster and processing station.	
Type of Vehicle Fuel Used to Truck Raw Biogas from the Dairy Cluster to a Central Biogas Processing Station, if applicable.		No	If the raw biogas is trucked within a dairy cluster to a central biogas processing station, enter the vehicle fuel type. Select N/A if the raw biogas is transported via pipeline.	
Annual Number of Trips to Truck Raw Biogas between the Dairy Cluster to a Central Biogas Processing Station, if applicable (Trips/Year)		No	If the raw biogas is trucked within a dairy cluster to a central biogas processing station, enter the number of vehicle trips each year to truck the raw biogas.	
This section is used to further define the transportation RNG fuel use.				
RNG use in a Low NOx Vehicle	Yes	Yes	Whether the RNG transportation fuel produced by the project is expected to be used in a low NOx natural gas vehicle (0.02 g/bhp-hr or less).	
This section is used to further define the dairy operation, if applicable.				
Solid Separation	Baseline	Weeping Wall	Yes	The current method of solids separation.
	Project	Screw Press	Yes	The future method of solids separation after project implementation.
Practice for Separated Solids from Non-Anaerobic Treatment/Storage	Baseline	Daily Spread	Yes	The current practice for separated solids that are not sent to an anaerobic lagoon or storage pond.
	Project	Composting - aerated static pile	Yes	The future practice for separated solids that are not sent to an anaerobic lagoon or storage pond, after project implementation.
Practice for Separated Solids from Other Non-Anaerobic Treatment/Storage	Baseline		Optional	Any additional current practice for separated solids that are not sent to an anaerobic lagoon or storage pond, if applicable.
	Project		Optional	Any additional future practice for separated solids that are not sent to an anaerobic lagoon or storage pond, after project implementation, if applicable.
Dairy Cows (freestall)	Number of livestock	500	Yes	The number of freestall dairy cows at the current dairy operation.
	Baseline % VS sent to any other non-anaerobic treatment/storage		No	The percentage of baseline volatile solids from freestall dairy cows sent to the current additional practice for separated solids.
	Project % VS sent to any other non-anaerobic treatment/storage		No	The percentage of future volatile solids from freestall dairy cows sent after project implementation to the future additional future practice for separated solids.
Dairy Cows (open lot corrals)	Number of livestock	200	Yes	The number of open lot corral dairy cows at the current dairy operation.
	Baseline % VS sent to any other non-anaerobic treatment/storage		No	The percentage of baseline volatile solids from open lot dairy cows sent to the current additional practice for separated solids.
	Project % VS sent to any other non-anaerobic treatment/storage		No	The percentage of future volatile solids from open lot dairy cows sent after project implementation to the future additional future practice for separated solids.
Dry cows	Number of livestock	50	Yes	The number of dry cows at the current dairy operation.
	Baseline % VS sent to any other non-anaerobic treatment/storage		No	The percentage of baseline volatile solids from dry cows sent to the current additional practice for separated solids.
	Project % VS sent to any other non-anaerobic treatment/storage		No	The percentage of future volatile solids from dry cows sent after project implementation to the future additional future practice for separated solids.
Heifers	Number of livestock	20	Yes	The number of heifers at the current dairy operation.
	Baseline % VS sent to any other non-anaerobic treatment/storage		No	The percentage of baseline volatile solids from heifers sent to the current additional practice for separated solids.
	Project % VS sent to any other non-anaerobic treatment/storage		No	The percentage of future volatile solids from heifers sent after project implementation to the future additional future practice for separated solids.

Enter the project information into the LCFPP Calculator Tools **Inputs\_Lifetime Production** tab to define the quantification periods.

	Reporting Years				
<b>Transportation Fuel</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>
Primary Fuel: RNG	90%	95%	100%	100%	100%
Secondary Fuel: Hydrogen	0%	65%	85%	95%	95%
Tertiary Fuel: Other #1	0%	65%	85%	95%	95%
<b>Stationary Fuel</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>
Renewable Natural Gas	100%	80%	75%	75%	75%
Renewable Electricity	100%	80%	75%	75%	75%

Enter the project information into the LCFPP Calculator Tools **Inputs\_AB1550** tab to estimate benefits to priority populations.

Qualifying Question	Required	Inputs	Added Criteria Table
<b>Additional Potential AB 1550 Project Benefits</b>			
Will the project increase residential, commercial, public-sector or industrial energy efficiency or renewable energy generation?	Yes	Yes	Energy Efficiency and Renewable Energy
Will the project divert waste from landfills, forestry, or agricultural operations to other productive uses?	Yes	No	
Will the project directly benefit priority populations by providing jobs or jobs training, using GGRF funds for labor and/or training?	Yes	Yes	Job Training and Workforce Development
Qualifying Question	Required	Inputs	Description / Additional Supporting Information
<b>Step 1 – Identify the Priority Population(s)</b>			
<b>Evaluate the project against each of the following criteria.</b>			
Is the project located within a disadvantaged community census tract, low-income community, both disadvantaged and low-income community, buffer zone, or none of the above? Use the AB 1550 mapping tool available at: <a href="https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/communityinvestments.htm">https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/communityinvestments.htm</a>	Yes	Disadvantaged Community	Located in census tract 6029003206.
Does the project target jobs (using formal targeted hiring strategies) or provide job training to residents of the community that was selected above?	Yes	Yes	Hiring program with Local Green Jobs.
<b>Step 2 – Address a Need</b>			
<b>Identify an important community or household need and evaluate whether the project provides a benefit that meaningfully addresses that need.</b>			
<b>A. Recommended Approach:</b> Host community meetings, workshops, outreach efforts, or public meetings as part of the planning process to engage local residents and community groups for input on community or household needs, and document how the received input was considered in the design and/or selection of projects to address those needs.	Yes	No	
<b>B. Recommended Approach:</b> Receive documentation of support from local community-based organizations and/or residents (e.g., letters, emails) identifying a need that the project addresses and demonstrating that the project has broad community support.	Yes	Yes	Received letters from Local Health Group 101 and Community Clean Transportation Advocates supporting the project's benefits to community members.
<b>C. Alternative Approach:</b> Where direct engagement is infeasible, look at the individual factors in CalEnviroScreen that are most impacting an identified disadvantaged or low-income community (i.e., factors that score above the 75th percentile), and confirm that the project will reduce the impacts of at least one of those factors.	Yes	No	
<b>D. Alternative Approach:</b> Where direct engagement is infeasible, refer to the list of common needs for priority populations in CARB's Funding Guidelines Table 5 and confirm that the project addresses at least one listed need.	Yes	No	

Step 3 – Provide a Benefit			
Evaluate the project against each of the following criteria to determine if it provides direct, meaningful, and assured benefits to priority populations. The benefit provided must directly address the identified need.			
A1. Project provides incentives for vehicles, equipment, or renewable transportation fuel that reduce criteria air pollutant or toxic air contaminant emissions, such as diesel particulate matter.	Yes	No	
B1. Project provides greater mobility and increased access to clean transportation for residents of a disadvantaged or low-income community by placing services in that community, including ride-sharing, car-sharing, or other advanced technology mobility options (e.g., neighborhood electric vehicles, vanpooling, shuttles, smartphone application-based ride-sharing services, bike-sharing services).	Yes	No	
C1. Project provides greater mobility and increased access to clean transportation for residents of a disadvantaged or low-income community, or a low-income household, by providing incentives for the retirement or replacement of older, higher-emitting vehicles.	Yes	No	
A2. Project provides energy efficiency upgrades to residents of a disadvantaged or low-income community or a low-income household (e.g. single- or multi-family housing units, shelters, college/university campus housing).	Yes	No	
B2. Project provides renewable energy and direct energy cost savings to residents of disadvantaged or low-income communities, or low-income households (e.g. solar photovoltaic systems or community solar).	Yes	No	
C2. Project reduces on-site criteria air pollutant or toxic air contaminant emissions through reduction of fossil fuel consumption via efficiency improvements or electrification.	Yes	No	
D2. Project reinvests energy or fuel cost savings that would otherwise be realized by the funding recipient into the same disadvantaged or low-income community, or to low-income households, to provide direct, meaningful, and assured benefits to residents.	Yes	No	
	No		
	No		
	No		
A4. Project provides high-quality (e.g., local living wages, health insurance, paid leave) jobs to priority populations.	Yes	Yes	Will offer high-quality jobs with health and leave benefits. Expected salaries will be 20% higher than the local average.
B4. Project provides job training to priority populations that is part of a program with an established placement record.	Yes	No	
C4. Project provides job training to priority populations that includes capacity building that leads to industry-recognized credentials (e.g., certifications, certificates, degrees, licenses, other documentation of competency and qualifications).	Yes	Yes	Certified training program through ReTool for California.

At the bottom of the **Inputs\_AB1550** tab is a summary table that indicates, based upon the inputs, whether the project may meet the Step 1 – 3 criteria for claiming that the project provides benefits to priority populations, per AB 1550. However, final determination for deciding whether the project may claim benefits for AB 1550 relies upon staff evaluation.

AB 1550 Eligibility Summary	
Does the project meet Step 1?	Yes
Does the project meet Step 2?	Yes
Does the project meet Step 3 (corresponding to Step 1)?	Yes
<b>Does the project potentially provide benefits to priority populations?</b>	<b>Yes</b>

### Step 3: Estimate GHG Emission Reductions and Selected Co-benefits for the Proposed Project Using the LCFPP Benefits Calculator Tool

The **GHG Summary** tab displays the Total GHG Emission Reductions per Total LCFPP GGRF Funds and per Total GGRF Funds. GHG emission reductions are prorated according to the level of program funding contributed from LCFPP and other California Climate Investments programs, as applicable.

Project Information			
Project Name	RNG Production Company		
Total LCFPP GGRF Funds Requested (\$)	\$		3,500,000
Other GGRF Leveraged Funds (\$)	\$		2,000,000
Non-GGRF Leveraged Funds (\$)	\$		6,500,000
Total Funds (\$)	\$		12,000,000

GHG Summary	
Total LCFPP GHG Emission Reductions (MTCO <sub>2</sub> e)	1,690
Total GHG Emission Reductions (MTCO <sub>2</sub> e)	2,656
Total GHG Emission Reductions per LCFPP GGRF Funds (MTCO <sub>2</sub> e/\$million)	759
Total GHG Emission Reductions per GGRF Funds (MTCO <sub>2</sub> e/\$million)	483
Total GHG Emission Reductions per Total Funds (MTCO <sub>2</sub> e/\$million)	221

The **Co-benefits Summary** tab displays the key variables and air pollutant emission estimates from the project. Key variables and air pollutant emission estimates are also prorated according to the level of program funding contributed from LCFPP and other California Climate Investments programs, as applicable.

Co-benefits and Key Variables Summary				
				LCFPP GGRF Funds
Fossil Fuel Use Reductions (gallons)				31,581
Renewable Fuel Generation (gallons)				28,346
Fossil Fuel Energy Use Reductions (kWh or therm)		kWh		therm
Renewable Energy Generation (kWh)				65,874
Material Diverted from Landfill (tons)				
Water Savings (gallons)				
<b>Criteria and Toxic Air Pollutant Emission Reductions</b>	<b>Local</b>	<b>Remote</b>	<b>Total</b>	
NOx emission reductions (lbs)	-52	-734	-787	
ROG emission reductions (lbs)	14,997	-188	14,809	
PM2.5 emission reductions (lbs)	-6	-273	-279	
Diesel PM emission reductions (lbs)	0	-15	-15	
				<b>Total</b>
Fossil Fuel Use Reductions (gallons)				49,628
Renewable Fuel Generation (gallons)				44,544
Fossil Fuel Energy Use Reductions (kWh or therm)		kWh		therm
Renewable Energy Generation (kWh)				103,517
Material Diverted from Landfill (tons)				
Water Savings (gallons)				
<b>Criteria and Toxic Air Pollutant Emission Reductions</b>	<b>Local</b>	<b>Remote</b>	<b>Total</b>	
NOx emission reductions (lbs)	-82	-1,154	-1,236	
ROG emission reductions (lbs)	23,567	-295	23,271	
PM2.5 emission reductions (lbs)	-9	-429	-439	
Diesel PM emission reductions (lbs)	0	-24	-24	